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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,714	09/17/2003	Daijiro Inoue	57810-076	2234

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EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/663,714

Applicant(s)

INOUE ET AL

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-10,12 and 14-26 is/are pending in the application.
- 4a) Of the above claim(s) 8,10 and 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,7,9,12,14-16 and 23-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. The amendment filed 3/16/06 has been entered and claim 26 has been added.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the second optical guide having a smaller thickness than the first optical guide** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6, 7, 9, 12, 14-16 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagahama et al. ("Nagahama") US PG-Pub 2005/0127394 in view of Tanizawa et al. ("Tanizawa") EP 1063711 (of record)

Nagahama discloses in fig. 2 a nitride-based semiconductor light-emitting device comprising: a first conductivity type first nitride-based semiconductor layer 14 formed on a substrate or first conductivity (par. 0198) GaN substrate (as in claim 23); an active layer 16, formed on said first nitride-based semiconductor layer; a second conductivity type second nitride-based semiconductor layer 19 formed on said first undoped optical guide layer; a contact layer 20 formed on said second nitride-based semiconductor layer; and an electrode 21 formed on said contact layer, but lacks anticipation of an undoped contact layer wherein said undoped contact layer having a thickness.

Tanizawa discloses (figs. 1-5, 8 and pars. 0369 and 0370 and 0450-0455) a nitride-based semiconductor light-emitting device comprising: a first conductivity type first nitride-based semiconductor layer 205 formed on a substrate or first conductivity GaN substrate 203 (as in claim 23); an active layer 7, formed on said first nitride-based semiconductor layer; a second conductivity type second nitride-based semiconductor layer 108 consisting AlGaIn (par. 0449) (as in claim 3); an undoped contact layer 208a (par. 0450) constituted of a single layer (as in

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claim 9) having a band gap smaller than the band gap of said second nitride-based semiconductor layer (as in claim 2) formed on said second nitride-based semiconductor layer, and an electrode 10 formed on said undoped contact layer, wherein said undoped contact layer has a thickness (par. 00202 and 0450).

Therefore, in view of Tanizawa's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Nagahama's device by incorporating an undoped contact layer having the specified thickness since that would prevent generation of fine cracks as taught by Nagahama. It would have been obvious to meet the recited thickness since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 4, Tanizawa discloses a first conductivity type first nitride-based semiconductor layer being an n-type first nitride-based semiconductor layer, and said second conductivity type second nitride-based semiconductor layer being a p-type second nitride-based semiconductor layer.

Regarding claims 6 and 7, Tanizawa discloses said undoped contact layer containing InGaN (as in claim 7) having a band gap larger than the band gap of said active layer.

Regarding claim 12, as understood, Nagahama discloses (par. 0136) said first undoped optical guide layer nitride-based semiconductor layer 18 being formed only between said active layer 16 and said second nitride-based semiconductor layer 19 in the interspaces between said active layer and said first and second conductivity type first and second nitride-based semiconductor layers.

Regarding claim 14, Nagahama discloses said second conductivity type second nitride-based semiconductor layer including a second conductivity type second nitride-based semiconductor layer consisting of AlGa<sub>N</sub> (par. 0139), and said first undoped optical guide layer consisting of Ga<sub>N</sub>.

Regarding claim 15, Nagahama discloses a second conductivity type second nitride-based semiconductor layer including a second conductivity type cladding layer 19 having a projection, said contact layer 20 being formed on the upper surface of said projecting portion of said second conductivity type cladding layer, and said projecting portion of said second conductivity type cladding layer and said contact layer constitute a ridge portion.

Regarding claim 16, Nagahama discloses an active layer consisting of a nitride-based semiconductor containing In (par. 0131), said nitride-based semiconductor light-emitting device further comprising a protective layer 17 (pars. 0134 and 0135) of a nitride-based semiconductor layer formed on said active layer.

The recitation calling “for preventing In contained in said active layer from desorption” attempts to distinguish the invention from the prior art in terms of function rather than structure. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding claim 24, Nagahama discloses (par. 0130) a second undoped optical guide layer 15 formed between the first nitride base layer 14 and said active layer 16.

Regarding claim 25, Nagahama discloses (pars. 0130 and 0134) said second undoped optical guide layer having a thickness within the recited range.

***Response to Arguments***

Applicant's arguments with respect to claims 1-4, 6, 7, 12, 14-16 and 23-25 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2826

ANS

May 29, 2006

